

**MWD**

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

January 15, 1998

**To:** Board of Directors (Engineering and Operations Committee--Information)  
(Special Committee on Water Quality, Desalination, and  
Environmental Compliance--Information)

**From:** *for* General Manager

*Charles Messing*

**Submitted by:** Mark D. Beuhler  
Director of Water Quality

*Mark Beuhler*

**Subject:** Update on Disinfection By-product Regulations

## **RECOMMENDATION**

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For information only.

## **EXECUTIVE SUMMARY**

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New regulations for disinfection by-products will be promulgated by the U.S. Environmental Protection Agency (USEPA) in November, 1998. These regulations will lower the federal standards for disinfection by-products. Additional impetus for these new, lower standards may be provided by soon to be published studies regarding disinfection by-products and suspected links to increased risk of cancer and miscarriages. These studies will undoubtedly fuel the ongoing health effects debate and may reinforce Metropolitan's efforts to reduce these contaminants through the use of ozone and the implementation of source protection strategies to preserve drinking water quality.

## **DETAILED REPORT**

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In November 1997, the U.S. Environmental Protection Agency (USEPA) published proposed regulations for companion rules to tighten limits on disinfection by-products and improve control of waterborne microbial contaminants. The two regulations were developed jointly because USEPA realized that to reduce disinfection by-product regulations alone might cause utilities to decrease necessary disinfection of drinking water. Adequate disinfection is essential to destroy pathogens in drinking water, which are by far the greatest source of human health risk in drinking water.

### Disinfectants and Disinfection By-products Rule

The proposed Stage I Disinfectants and Disinfection By-products Rule (Stage I D/DBP) will cut the allowable level of total trihalomethanes (THMs) from 100 micrograms per liter ( $\mu\text{g/L}$ ) to 80  $\mu\text{g/L}$  and set new limits for haloacetic acids (60  $\mu\text{g/L}$ ), bromate (10  $\mu\text{g/L}$ ), and chlorite (1 milligram/L). In addition, utilities are required to remove DBP precursors through enhanced coagulation, enhanced softening, or alternative technologies such as ozonation, granular activated carbon or membranes.

Final design of ozonation facilities at the State Project Water plants, Mills and Jensen, is underway (State Project water produces significantly higher levels of disinfection by-products as compared to Colorado River water). Ozone is needed to comply with the proposed Stage I D/DBP Rule. Based on rule promulgation in November, 1998, utilities will be required to comply with the regulations by November, 2001-2003, depending on the size of the utility and the need for capital improvements. Metropolitan is currently on schedule with ozone implementation at these two plants ensuring that Metropolitan and its member agencies receiving this water will be in compliance with the Stage I D/DBP Rule.

### Interim Enhanced Surface Water Treatment Rule

The companion regulation to the disinfection by-product regulation is the Interim Enhanced Surface Water Treatment Rule (IESWTR). This regulation ensures that microbial risks from pathogens such as *Cryptosporidium* will not be increased as a result of efforts to reduce disinfection by-products. The proposed IESWTR would reduce the allowable maximum turbidity levels for filtered systems serving at least 10,000 people from 5 NTU to 1 NTU and cut the average monthly limit for combined filter effluent from 0.5 NTU to 0.3 NTU. Treatment systems will be required to achieve 99 percent removal of *Cryptosporidium*, install individual filter turbidimeters for monitoring purposes, and undertake periodic sanitary surveys. Ozone is also effective for killing *Cryptosporidium*.

### DBP Health Effects

Currently, evidence related to DBPs and health effects is mixed. New research will soon be published regarding disinfection by-products. A study, expected to be published in March, found an association between high exposure to total THMs and miscarriages in California.

These studies will fuel the continued debate on the health effects of DBPs and draw public attention to the quality of drinking water supplies. This may further justify the control of DBPs as proposed in the recent regulations. They may also advance the schedule and/or stringency of Stage II of the D/DBP Rule, which may further lower the standards for disinfection by-products in drinking water.

### Planned Activities

Metropolitan has committed to the installation of ozone in time to comply with the Stage I D/DBP Rule. The use of ozone will substantially reduce our levels of THMs. Metropolitan is also working with its member agencies to adjust the level of chloramines in the distribution system, which may enable a further reduction in the use of free chlorine and thereby reduce disinfection by-products.

Additional efforts underway to further reduce disinfection by-products involve prevention of their precursors (bromide, total organic carbon) from entering Metropolitan's source water. The most effective way to achieve this is a Bay/Delta solution that will protect drinking water quality. A Delta transfer facility which allows flexibility to divert supplies at a location with low bromides and total organic carbon is the best way to accomplish source protection.

An "issues management team" has been created by the Communications Division to help prepare for potential public reaction to the new health effects information. The intent is to proactively communicate all of the steps Metropolitan has been taking to reduce disinfection by-products, with an emphasis on the long-term solution of a fix for the Bay/Delta.

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